

SAMPLING AND ANALYSIS PLAN

***E-Cycle NW Removal
Time-Critical Removal Action
Sequim, Clallam County, Washington
Task Order No.: 68HE0721F0058***



Prepared for:

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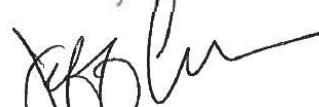

Figure 2 – Site Vicinity

LIST OF ATTACHMENTS

Attachment A Container, Preservation, and Hold Times

Attachment B Site Action Levels

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Notes:

EMB	Emergency Management Branch
OSC	On-Scene Coordinator
QAO	Quality Assurance Officer
START	Superfund Technical Assessment and Response Team
SOW	Scope of Work
TOCOR	Task Order Contracting Officer's Representative
USEPA	United States Environmental Protection Agency

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Notes:

EMB	Emergency Management Branch
OSC	On-Scene Coordinator
QAO	Quality Assurance Officer
SAP	Sampling and Analysis Plan
START	Superfund Technical Assessment and Response Team
SOW	Scope of Work
TOCOR	Task Order Contracting Officer's Representative
USEPA	United States Environmental Protection Agency
WESTON	Weston Solutions, Inc.

LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ACM	Asbestos Containing Material
AHERA	Asbestos Hazard Emergency Response Act
APR	Air Purifying Respirator
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Laboratory Program
CO	Carbon monoxide
COC	Contaminant of concern
DQO	Data quality objective
Ecology	Washington State Department of Ecology
EMB	Emergency Management Branch
ERRS	Emergency and Rapid Response Services
E-waste	Electronic Waste
GPS	Global Positioning System
H ₂ S	hydrogen sulfide
HASP	Health and Safety Plan
HAZCAT	Hazard Categorization
HCl	Hydrochloric Acid
HDPE	High density polyethylene
HMIS	Hazardous Material Information System
HNO ₃	Nitric Acid
L	Liter
LEL	Lower explosive limit
m	Meter
mL	Milliliter
N/A	Not Applicable
NELAP	National Environmental Laboratory Accreditation Program
ng	Nanogram
NIOSH	National Institute for Occupational Safety and Health
NWTPH	North West Total Petroleum Hydrocarbon
NFPA	National Fire Protection Association
O ₂	Oxygen
OSC	On-Scene Coordinator

LIST OF ACRONYMS, CONTINUED

OSHA	Occupational Safety and Health Administration
oz	Ounce
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PEL	Permissible exposure limit
ppb	Part-per billion
PPE	Personal protective equipment
ppm	Parts per million
PTFE	Polytetrafluoroethylene
R10	EPA, Region 10
QAP	Quality Assurance Plan
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RDMP	Regional Data Management Plan
RML	Removal Management Level
RSL	Regional Screening Level
SAP	Sampling and Analysis Plan
SAPAF	Sampling and Analysis Plan Alteration Form
SSID	Site Spill Identification
SOP	Standard Operating Procedure
SOW	Scope of Work
SSDMP	Site-Specific Data Management Plan
SSHSP	Site-Specific Health and Safety Plan
SSID	Site Spill Identification
START	Superfund Technical Assessment and Response Team
SVOC	Semi-volatile Organic Compound
TAT	Turnaround Time
TOCOR	Task Order Contracting Officer's Representative
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WESTON®	Weston Solutions, Inc.

1 INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) tasked Weston Solutions, Inc. (WESTON®) under Superfund Technical Assessment and Response Team (START) Contract No. 68HE0720D0005 and Task Order No. 68HE0721F0058 to conduct a time-critical removal action (TCRA) at the E-Cycle NW Removal (Site) located in Sequim, Clallam County, Washington.

This Sampling and Analysis Plan (SAP) is prepared and used in conjunction with the Quality Assurance Plan (QAP) for the Emergency Management Branch (EMB) (USEPA, 2020) and the START V Programmatic Quality Assurance Project Plan (QAPP) (WESTON, 2020) for sampling and air monitoring activities during this Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) project. Information collected from this TCRA will be stored as outlined in the Site-Specific Data Management Plan (SSDMP) (WESTON, 2021). The information contained herein is based on the information that was available at the time of preparation. As additional information becomes available, this SAP may be adjusted or updated through a Sampling and Analysis Plan Alteration Form (SAPAF).

2 SITE LOCATION AND BACKGROUND

Table 2-1 Site Information

Site Name:	E-Cycle NW Removal
Location:	272693 Highway 101, Sequim, Washington 98382
EPA ID:	WAN001010126
SSID:	10RW
Latitude, Longitude:	48.040458° North, 122.984068° West

Notes:

EPA Environmental Protection Agency
SSID Site Spill Identification

The property owner's family purchased the land in 1985 and lived and ran a business on the property. They operated a plumbing company and stored materials on a portion of the land and leased a portion of the land to a construction company to store heavy machinery. The property owner's family installed a concrete pad on the Site that drains to a catch basin. In 2009, the property owner leased the land to Mr. Dan Tharp who used the land to operate an electronics recycling

facility under the business name E-Cycle NW. The business became the primary electronic waste (E-waste) recycling location for the region. Electronics and other recyclable goods were collected and stored on the site by E-Cycle NW. However, when the business closed in 2017, a stockpile of materials and electronics was left on the Site for the property owner to dispose of. The Site was identified by Washington Department of Ecology (Ecology) when the property owner requested assistance in removing the large quantity of E-waste abandoned by E-Cycle NW. Ecology assessed the property and received a Proposal of Removal Work from the contractor Total Reclaim, Inc. for the labor, removal, and disposal of the hazardous materials found on the Site. Ecology determined it would be unable to complete the work and requested the assistance of USEPA to complete the removal.

2.1 SITE DESCRIPTION

The Site is located on the north side of the Olympic Peninsula near Sequim, Washington (**Figure 1**). The site is a 4-acre lot with a residential house where the property owner and her family live and several other buildings. Surrounding the Site is a rural residential area, a public park, and Jamestown S'Klallam Tribal land to the south. The E-Cycle NW business operated out of three main buildings on the property that are referred to by the owner as: The Pig Pen (BD01), The Warehouse (BD02) and the Workshop (BD03). BD02 also contains a workshop and several bays labeled 1 through 6 moving south to north, which will be treated as separate decision units as well. Additional materials, both hazardous and non-hazardous, are staged in the yard outside of the buildings. These yards are broken into four main decision units: YA01, YA02, YA03, and YA04 (**Figure 2**). All buildings and most yard areas contain several different hazardous materials, which were identified as hazardous during the 2019 Site walk with USEPA, START, the Emergency and Rapid Response Services (ERRS) contractor, Ecology, and the property owner (**Table 2-2**).

Table 2-2 Identified Hazardous Material by Decision Unit

Decision Unit	Identified Hazardous Material
BD01	<ul style="list-style-type: none">• Fluorescent bulbs• Paint-related material• Aerosol cans• Cathode ray tubes• Potential PCB-containing ballasts
BD01-WS	<ul style="list-style-type: none">• Compressed gas cylinders

Decision Unit	Identified Hazardous Material
	<ul style="list-style-type: none"> • Capacitors • Unknown chemical containers
BD02-1	<ul style="list-style-type: none"> • Potentially PCB-containing capacitors
BD02-2	<ul style="list-style-type: none"> • Paint-related material • Printer toner cartridges • Mixed batteries • Fluorescent light bulbs
BD02-3	<ul style="list-style-type: none"> • None observed, largely inaccessible
BD02-4	<ul style="list-style-type: none"> • Unknown containers • Fluorescent lights
BD02-5	<ul style="list-style-type: none"> • Containers of waste Oil
BD02-6	<ul style="list-style-type: none"> • Unknown chemical containers • Paint-related material • Fluorescent lights • Mixed batteries
BD03	<ul style="list-style-type: none"> • Fluorescent lights • Unknown chemical containers • Compressed gas cylinders • Potential PCB-containing ballasts • Mixed batteries
YA01	<ul style="list-style-type: none"> • Refrigerators containing refrigerant gases
YA02	<ul style="list-style-type: none"> • None observed, inaccessible flammables cabinet identified
YA03	<ul style="list-style-type: none"> • Unknown chemical containers • Compressed gas cylinders
YA04	<ul style="list-style-type: none"> • Unknown chemical containers • Compressed gas cylinders

Notes:

PCB

Polychlorinated biphenyl

The TCRA site work is being conducted to remove the hazardous materials and prevent a future release of CERCLA hazardous materials to the land and surrounding areas that may impact the surrounding residents and environment. The objective is to remove and dispose of the hazardous materials that the property owner would otherwise be unable to dispose of properly and prevent a release into the environment. Primary START tasks include:

- The inventory, collection, and hazard determination of the unknown chemicals throughout the Site using a hazardous categorization (HAZCAT) determination system for off-site disposal.
- Mercury Air Monitoring/Sampling for operator health and safety while workers operate a bulb crusher to dispose of the mercury-containing fluorescent bulbs on the Site.

- Determining if any asbestos containing material (ACM) is present on the Site.
- Surface water and soil sampling to determine if contaminants of concern (COCs) are present on the Site.

2.2 SITE MAP/FIGURE

The Site Location Map and the Sample Area Map are included as **Figure 1** and **Figure 2** respectively, in the attachments.

3 PROJECT SCHEDULE

The proposed schedule for the project is as follows:

Table 3-1 Proposed Project Schedule

Activity	Estimated Start Date	Estimated Completion Date	Comments
SAP/SSDMP/HASP Draft Submittal	4/13/2021	4/23/2021	
SAP/SSDMP/HASP Final Submittal	-	4/30/2021	
Mobilize to the Site	5/3/2021	-	
Sample collection activities	5/3/2021	5/20/2021	
Laboratory receipt of samples	5/5/2021	5/20/2021	
Demobilize from the site	-	5/20/2021	
Laboratory Analysis	5/5/2021	6/3/2021	For TATs, See section 10.
Data Validation	After the receipt of the data	6/10/2021	
Report Draft	5/20/2021	7/20/2021	
Report Final	-	8/20/2021	
Project Closeout	9/20/2021	9/20/2021	

Notes:

HASP Health and Safety Plan
SAP Sampling and Analysis Plan
SSDMP Site-Specific Data Management Plan
TAT Turnaround Time

4 SAMPLING OBJECTIVES

The objectives of the sampling that will be conducted during the TCRA include:

- Air Monitoring/Air Sampling
 - Air monitoring and sampling will be conducted in the breathing zone and along the perimeter of the fluorescent bulb crushing area and the hazard categorization area for worker health and safety.
- Soil and Water Sample Collection
 - Sampling will be used to determine the presence or absence of a hazardous substance within areas of concern on the Site.
 - Surface soil sampling to determine if contamination exists in specific source areas or areas of concern.
 - Surface water sampling to determine the water quality on the Site.
- Drums and Containers
 - Visual inspection and monitoring of containers.
 - Determining the contents or hazards associated with the containers and/or drums.
 - Determining the contents of containers and/or drums for off-site disposal.
- Materials Sampling
 - Sampling suspect materials identified through an asbestos survey as potential ACM.

5 INTENDED DATA USE

Data that are generated will:

- Be compared with an available reporting level.
- Assist in determining the presence or absence of a hazardous substance at levels above an available reporting limit.
- Soil and surface water samples will be compared with applicable action levels (e.g., Ecology Model Toxics Control Act Cleanup Levels and Risk Calculation, USEPA Regional Screening Levels [RSLs], and/or USEPA Removal Management Levels [RMLs]).

- Mercury air samples will be compared with federal or state occupational health limits (e.g., Occupational Safety and Health Act [OSHA]/National Institute for Occupational Safety and Health [NIOSH]).
- HAZCAT will assist with determining a material's general hazard classification and will be used to profile waste material for off-site disposal or treatment.

6 DATA QUALITY OBJECTIVES

Data quality objectives (DQOs) for technical support activities have been established and are as follows:

1. Statement of the Problem

Hazardous materials have been abandoned on the property and need to be removed because they are a threat to human health and the environment. These include the items listed in **Table 2-2**. To support the removal, the unknown chemical containers will need to be inventoried and sampled, and HAZCAT will need to be conducted to determine a hazard class. The fluorescent mercury-containing bulbs on the property will be crushed for disposal. A combination of sampling and monitoring will need to be conducted for health and safety purposes to support this activity. Materials, machinery, and electronics may be ACM. If there are suspected ACM identified, samples will be collected and analyzed to determine if they are ACM. Surface water and soil sampling will be collected to determine if COCs are present and migrating from the Site.

2. Decision Statement	3. Inputs into the Decision	4. Boundaries of the Study ^{a, b}
Monitor/sample for mercury in the air to determine the concentrations in the operator breathing zone	Monitoring data, sampling data, location, operator, action levels	Bulb crushing area, Until the activity can be determined as not hazardous to the operator
Soil sampling to determine if COCs have migrated into the soil	Sampling results, Sampling location, Sampling depth, Sampling time	Site footprint
Surface water sampling to determine if COC have	Sampling results, Sampling location, Sampling depth, Sampling time	On-site surface waters

2. Decision Statement	3. Inputs into the Decision	4. Boundaries of the Study ^{a, b}
migrated into the surface water		
Determine the hazard classification of unknown containers/chemicals on site	Inventory, container observations, HAZCAT/First Step analysis results	Containers on site
Determine if a material on site is ACM for worker safety and disposal considerations	Asbestos survey, material type, material location, material volume, sample results	All decision units

a. *Temporal Study Boundary (i.e., Site activities to occur May 5 through May 20 2021.)*

b. *Reference Figure 2: (i.e., The approximate perimeter of the site, specific decision units.)*

5. Develop the Decision Rule

Monitoring results will be compared to the applicable action levels included in Section 8 of this SAP.

If mercury concentrations, as determined by either air monitoring or air sampling, exceed the Site worker health and safety action level, engineering controls will be evaluated for effectiveness and personal protective equipment (PPE) will be used to mitigate worker exposure. If concentrations are demonstratively and consistently low as measured by personal air sampling, air sampling will no longer need to be conducted. Air monitoring will continue regardless of the measured concentration.

If soil sampling results exceed Site action levels, EPA may decide to conduct soil removal to prevent further off-site migration.

If surface water samples exceed Site action levels and indicate the potential for off-site migration of the COCs, EPA may choose to conduct soil removal activities of contaminated areas identified by the soil sampling.

If surface water samples exceed Site action levels and indicate the potential for off-site migration of the COCs, and the source of the contamination is not identified, additional soil sampling may be conducted to identify the source of the contamination.

If the materials are identified by the asbestos survey as potential ACM, samples will be collected and analyzed for asbestos.

If asbestos samples are positively identified as ACM, USEPA may decide to conduct a removal of the ACM.

If unknown chemical containers are determined to be hazardous according to the Region 10 First Step Hazard Categorization guidance, they will be removed, transported, and disposed of according to the regulatory requirements that apply for the hazard classification.

6. Specify the Limits on the Decision Level

- Mercury Air Sampling – Definitive data
- Mercury Air Monitoring – Screening data
- Asbestos Sampling – Definitive data
- Soil/Surface Water Sampling – Definitive data
- HAZCAT– Screening data

7. Develop a Detailed Plan for Obtaining Data/Design Optimization

Data will be collected per the monitoring approach detailed in Section 9 and the sampling approach in Section 10 of this SAP. Monitoring descriptions, sampling information and other project data will be logged in field notes, in the Site logbook or collected using a Survey 123 form.

7 CONCEPTUAL SITE MODEL

Potential COCs for the Site, transport mechanisms, and potential receptors are provided in **Table 7-1** below.

Table 7-1 Conceptual Site Model

Contaminant	Transport Mechanism	Receptor and Pathway
Mercury	Transportation through air as a vapor, deposition and spread on surfaces	Workers in bulb crushing area, on-site residents

Contaminant	Transport Mechanism	Receptor and Pathway
Asbestos	Agitation of ACM putting asbestos fibers in the air, transportation through air currents	Workers in the area, on-site residents, neighboring residents
Volatile Organic Compounds	Transportation through air currents, deposition into surface soils, rain/weather transporting it to surface waters and off site	Workers in the area, on-site residents, neighboring residents, and sensitive surrounding environments
Semivolatile Organic Compounds	Deposition into surface soils, rain/weather transporting it to surface waters and off site	Workers in the area, on-site residents, neighboring residents, and sensitive surrounding environments
Total Petroleum Hydrocarbons	Deposition into surface soils, rain/weather transporting it to surface waters and off site	Workers in the area, on-site residents, neighboring residents, and sensitive surrounding environments
Pesticides	Deposition into surface soils, rain/weather transporting it to surface waters and off site	Workers in the area, on-site residents, neighboring residents, and sensitive surrounding environments
PCBs	Deposition into surface soils, rain/weather transporting it to surface waters and off site	Workers in the area, on-site residents, neighboring residents, and sensitive surrounding environments
Metals	Deposition into surface soils, rain/weather transporting it to surface waters and off site	Workers in the area, on-site residents, neighboring residents, and sensitive surrounding environments

Notes:

ACM asbestos-containing material

PCBs Polychlorinated biphenyls

8 ACTION LEVELS/SCREENING LEVELS

The Action Levels/Screening Levels that will be applied to the Site are included in **Table 8-1**. Additional information on each of the Action Levels/Screening Levels that was considered for this project is included below. Besides mercury, other worker health and safety action levels are documented in the Site Health and Safety Plan (HASP) and in **Table 9-1**.

Table 8-1 Action Levels

Action Level Source	Action Level Type	Matrix	Analyte	Value	Unit	Publication Date
ACGIH	Worker exposure to Mercury in air	Air	Mercury	12,500 (Half the action level)	ng/m ³	2019
AHERA	ACM	Bulk	Asbestos	1	%	N/A
R10 First Step Guidance	Unknown Chemical	Bulk	See First Step Guidance			2020
RSL/RML	Residential	Soil	See Method/ Analyte list	See attachment B		2020
MTCA*	Method B	Soil/Water				2021

*Hazard Quotient of 1

Notes:

ACGIH	American Conference of Governmental Industrial Hygienists	ng/m ³	Nanograms per cubic meter
ACM	asbestos containing material	R10	EPA Region 10
AHERA	Asbestos Hazard Emergency Response Act	RML	Removal Management Level
MTCA	Model Toxics Control Act	RSL	Regional Screening Level
N/A	not applicable	%	percent

8.1 REGIONAL SCREENING LEVELS

The USEPA RSLs provide comparison values to residential exposures to soil. The RSLs are risk-based screening levels calculated using the latest toxicity values, default exposure assumptions, and physical and chemical properties. Generally, RSLs are used to determine if further action at a site may be warranted. These screening levels are applicable to this project because the land use of the property and the surrounding areas are residential properties.

8.2 WASHINGTON STATE MODEL TOXICS CONTROL ACT

The Washington state model toxics control act (MTCA) provides legislatively promulgated cleanup criteria in Washington state. These criteria are enforceable in Washington state. These cleanup levels are applicable to this project because the site is located in the state of Washington.

8.3 ACTION LEVELS FOR UNKNOWN SUBSTANCES

The following action levels will be used for assessing the potential hazards of unknown substances utilizing First Step Methods.

Hazard by Characteristic of Flammability:

- If container labels indicate the contents are flammable.
- If First Step tests indicate flashpoint less than 140 degrees Fahrenheit (°F).
- If First Step flame tests indicate a solid is flammable.
- If First Step iodine saturation tests indicate a flammable solvent is likely present.

Hazard by Characteristic of Corrosivity:

- If container labels indicate the contents are corrosive, acidic, or basic (caustic).
- If pH is less than or equal to 2 or greater than or equal to 12.5.
- pH indicates whether a substance is acidic or basic and corrosive for segregation, compatibility and disposal.

Hazard by Characteristic of Reactivity:

- If container labels indicate the contents are reactive or are an oxidizer/peroxide.
- If First Step tests indicate an oxidizer or peroxide is present.

Hazard by Characteristic of Toxicity:

- If container labels indicate the contents are toxic or poisonous.
- If Hazardous Material Identification System (HMIS) or National Fire Protection Association (NFPA) labels indicate any health hazard (any value other than 0).
- If First Step Beilstein tests indicate halides (i.e., chlorinated solvents, polychlorinated biphenyls [PCBs]) are present.
- If First Step cyanide test is positive.
- If First Step hydrogen sulfide test is positive. If the First Step analyst finds any other cause for concern or if no clear indication of any of these characteristics are present, the sample may be set aside for further analysis.

8.4 MERCURY

The Mercury monitoring and sampling will be conducted concurrently with the bulb crushing operations for occupational health and safety and compared against ACGIH action levels for an 8

hour TWA work day. The ACGIH action level has been selected because it is as protective or more protective than other action levels published by OSHA or NIOSH.

8.5 ASBESTOS

The Asbestos Hazard Emergency Response Act (AHERA) is founded on the principle of “in-place” management of ACM. Removal of these materials is not usually necessary unless the material is severely damaged or will be disturbed by a building demolition or renovation project. A material is considered an ACM if it contains more than 1% asbestos.

9 MONITORING APPROACH

Monitoring at the Site will take place to meet the following objectives:

- Assess work Site activities (e.g., worker health and safety). Additional information is contained in the Health and Safety Plan (HASP).

Table 9-1 Site Monitoring

Objective	Analyte	Action Level	Action to be Taken	Basis	Instrument	Detection Limit
Worker Exposure Monitoring	Mercury	12,500 ng/m ³	Exceedance of action level requires the use of an APR respirator	Half the ACGIH action level	Jerome J505	10 ng/m ³
Site Characterization/ Worker Safety	VOCs	1 ppm above background, sustained for 1 min.	Upgrade to Level B PPE	WESTON HASP	MultiRAE	1 ppb
Site Characterization/ Worker Safety	H ₂ S	10 ppm (PEL)	Upgrade to Level B PPE	WESTON HASP	MultiRAE	1 ppm
Site Characterization/ Worker Safety	CO	50 ppm (PEL)	Upgrade to Level B PPE	WESTON HASP	MultiRAE	1 ppm
Site Characterization/ Worker Safety	O ₂	<19.5% or >22%	Upgrade to Level B PPE	WESTON HASP	MultiRAE	0.1%

Objective	Analyte	Action Level	Action to be Taken	Basis	Instrument	Detection Limit
Site Characterization/ Worker Safety	LEL	>10%	Upgrade to Level B PPE	WESTON HASP	MultiRAE	1%

Notes:

ACGIH	American Conference of Governmental Industrial Hygienists	O ₂	Oxygen
APR	Air Purifying Respirator	PEL	Permissible Exposure Limit
CO	Carbon Monoxide	ppb	part per billion
HASP	Health and Safety Plan	PPE	personal protective equipment
H ₂ S	Hydrogen Sulfide	ppm	part per million
LEL	Lower Explosive Limits	VOCs	Volatile Organic Compounds
ng/m ³	nanograms per cubic meter	%	percent

10 SAMPLING APPROACH

Mercury Sampling

Mercury air samples will be collected according to NIOSH method 6009 in the breathing zone of the operators of the fluorescent bulb crushers, which will be located on-site using an SKC personal pump. A minimum of one sample will be collected each day while operations continue for at least 8 hours or the duration of the work. Samples will be collected and documented at the end of the working day and sent to Pace Analytical Laboratory in Mt. Juliet, TN for analysis. A turnaround time (TAT) of 48 hours will be requested for all samples.

Asbestos Sampling

Bulk samples of potential ACM will be collected on an as-needed basis as determined by the Site AHERA- certified asbestos building inspector in accordance with AHERA guidance. Samples will be analyzed by LabCor laboratory in Portland, OR by method EPA/600/R-93/116. Samples will have a 24-hour TAT requested.

Soil Samples

Soil samples will be collected at locations to be determined by the On-scene Coordinator (OSC) in areas where COCs were stored in buildings and outside areas. Samples will be collected from 1—inch to 6-inch depth at predetermined intervals to determine if COCs are present. Collected samples will be analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), hydrocarbons, and metals with a 1-week turnaround time (TAT) and may be analyzed for pesticides and PCBs (see **Table 10-2** for methods) with a standard TAT at the discretion of the OSC. Soil samples will be analyzed by Pace Analytical Laboratory in Mt. Juliet, TN.

Surface Water Samples

Surface waters found on-site will be sampled on site for characterization of the water quality. Sampling locations will be determined by the accessibility and availability of the surface water at the time of collection. Collected samples will be analyzed for VOCs, SVOCs, hydrocarbons, metals, pesticides, and PCBs (see **Table 10-2** for methods) with a standard TAT by Pace Analytical Laboratory in Mt. Vernon, TN.

All subcontracted laboratory work will be conducted at National Environmental Laboratory Accreditation Program (NELAP)-, State-, and/or other recognized certification body-accredited laboratories. The need for START to subcontract a commercial laboratory is determined by USEPA and is based in part on availability of USEPA and/or Contract Laboratory Program (CLP) laboratories to conduct the requested work in the requested time period.

Based on the description of the Site provided in Section 2.1, **Table 10-1** summarizes the samples to be collected for this project.

Table 10-1 Sample Information Summary

Sampling Area	Matrix	Number of Samples	Type of Sample	Sample Pattern	Data Quality	Analytical Method
Surface soils	Soil	Up to 20	Grab	Biased	Definitive Data	Required: 8260D, 8270E, NWTPH-Gx,

Sampling Area	Matrix	Number of Samples	Type of Sample	Sample Pattern	Data Quality	Analytical Method
						NWTPH-Dx, SW6020B, As determined by OSC: SW8081B, SW8082A
Surface water on site	Water	Up to 10	Grab	Biased	Definitive Data	8260D, 8270E, NWTPH-Gx, NWTPH-Dx, SW6020B, SW8081B, SW8082A
Worker breathing zone, bulb crushing area	Air	Up to 30	Grab	Biased	Definitive Data	NIOSH 6009
Whole site	Building Material	Up to 20	Grab	Biased	Definitive Data	USEPA/600/R-93/116

Notes:

NIOSH	National Institute for Occupational Safety and Health
NWTPH-Dx	North West Total Petroleum Hydrocarbon – Semivolatile Petroleum Method
NWTPH-Gx	North West Total Petroleum Hydrocarbon – Volatile Petroleum Method
OSC	On-Scene Coordinator
USEPA	U.S. Environmental Protection Agency

The sample containers to be used to collect the samples indicated in **Table 10-1** are provided in **Table 10-2**.

Table 10-2 Sample Container Summary

Analysis ^a	Number of Containers	Field QC ^b	Container Type	Chemical Preservative
8260D	Soil: 1	1 duplicate per 10 samples, 1 MS/MSD per 20 samples	Soil: Terra Core into 40 mL Amber Vial with Septa Lid	MeOH (10 mL)
	Water: 3		Water: 40 mL Amber Vial with Septa Lid	HCl to pH < 2
8270E	Soil: 1		Soil: 4 oz glass	N/A
	Water: 2		Water: 100 mL Amber	N/A
NWTPH-Gx	Soil: 1		Soil: Terra Core into 40	MeOH (10 mL)

Analysis ^a	Number of Containers	Field QC ^b	Container Type	Chemical Preservative
			mL Amber Vial with Septa Lid	
	Water: 3		Water: 40 mL Amber Vial with Septa Lid	HCl to pH < 2
NWTPH-Dx	Soil: 1		Soil: 4 oz glass	N/A
	Water: 2		Water: 40 mL Amber Vial with Septa Lid	HCl to pH < 2
SW6020B	Soil: 1		Soil: 4 oz glass	N/A
	Water: 1		Water: 250 mL HDPE	HNO ₃ to pH < 2
SW8081B	Soil: 1		Soil: 4 oz glass	N/A
	Water: 2		Water: 100 mL Amber	N/A
SW8082A	Soil: 1		Soil: 4 oz glass	N/A
	Water: 2		Water: 100 mL Amber	N/A
NIOSH 6009	1 sorbent tube	2 trip blanks, 3 method blanks	Sample media: SKC 226-17A	N/A
USEPA/600/R-93/116	1	N/A	1-Ziploc	N/A

Notes:

a	For detailed analytical information see Attachment A.
b	Field QC includes blanks, field duplicates, and MS/MSD, where appropriate.
HCl	Hydrochloric Acid
HNO ₃	Nitric Acid
L	liter
mL	milliliter
N/A	not applicable
NIOSH	National Institute for Occupational Safety and Health
NWTPH-Dx	North West Total Petroleum Hydrocarbon – Semivolatile Petroleum Method
NWTPH-Gx	North West Total Petroleum Hydrocarbon – Volatile Petroleum Method
oz	ounce
QC	quality control
USEPA	U.S. Environmental Protection Agency

10.1 SAMPLE MANAGEMENT

Specific nomenclature that will be used by START will provide a consistent means of facilitating the sampling and overall data management for the project. The START chemist and data coordinator must each approve any deviations from the sample nomenclature proposed in the tables below.

Each sample will be provided with a unique numerical identifier (ex. 2105XXX) and a sample location code. The sample location code systems presented in **Table 10-3** and **Table 10-4** are designed to allow easy reference to the sample's origin and type. **Table 10-3** is for all samples collected for laboratory analysis purposes. **Table 10-4** is for all samples collected for on-site characterization by HAZCAT/First Step.

Table 10-3 Laboratory Sample Location Coding Key

Digits	Description	Code	Example
1,2,3,4	Decision Unit	See Figure 2	BD-01
5,6	Sample Type	SS – Surface Soil SW – Surface Water AS – Air Sample AB – Asbestos Sample	AS
7,8	Sample Number	##	01

Table 10-4 HAZCAT Sample Coding Key

Digits	Description	Code	Example
1,2	Container Type	A – Misc. Container B – Bucket D – Drum G – Compressed Gas Cylinder K – Tank L – Large Scale Container P – Paint/Paint-Related Material S – Small Scale Container T – Tote	D
3,4,5	Sample Number	###	001

11 DATA QUALITY

Data can generally be divided into three categories: definitive methodology (generally data generated using standard methodology), non-definitive methodology (also referred to as screening data), and screening data with at least a 10% definitive confirmation. The generation of definitive data is preferable; however, in emergency and time-critical situations where definitive data is not available, or for certain types of monitoring equipment, non-definitive data may be generated. The following data quality will be applied to the Site:

- **Screening data** that will include all HAZCAT/First Step results and mercury air monitoring results.
- **Definitive data** that may include air, soil, or water samples analyzed at an off-site fixed laboratory.

12 DATA VALIDATION

Data validation will be performed as listed in the USEPA Region 10 Emergency Management Program Standard Operating Guidance 144J (Analytical Data Validation) and in accordance with the USEPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (2009), where applicable to the analyses performed. The most current version of validation guidelines referenced in this document will be used.

Commercial laboratory data validation will be performed by a START chemist. Data will receive a minimum of Stage 2B evaluation (90% S2BVM) and 10% of the data will receive a minimum of a Stage 4 evaluation (10% S4VM). Congener data for PCBs will receive Stage 4 validation (100% S4VM).

Screening level data validation will be performed by a START chemist. All screening data will receive a Stage 2A evaluation.

The following final qualifiers shall be used during data validation:

- J = The associated numerical value is an estimated quantity because the reported concentrations were less than the sample quantitation limits or because quality control (QC) criteria limits were not met.

- R = The sample results are rejected (analyte may or may not be present) due to gross deficiencies in QC criteria. Any reported value is unusable. Resampling and/or reanalysis is necessary for verification.
- U = The material was analyzed for the analyte but it was not detected. The associated numerical value is the sample quantitation limit.
- UJ = The material was analyzed for the analyte but it was not detected. The reported detection limit is estimated because QC criteria were not met.

13 DATA REPORTING

In accordance with the USEPA Region 10 Regional Data Management Plan (RDMP), all field data will be managed in accordance with a SSDMP. The SSDMP will be updated as conditions require. Following collection, field data shall be processed to generate a Scribe compatible file, which will be imported into a Scribe database. Scribe datasets shall be published to Scribe.net.

14 SAMPLING METHODOLOGY

The following Standard Operating Procedures (SOPs) and/or instrumentation manuals will be used during the project:

- SOP 002 – Safety Plan Selection
- SOP 101- Field Activity Logbooks
- SOP 103 - Chain of Custody Documentation
- SOP 203- Surface Water Sampling
- SOP 301 - Sampling and Field Equipment Decontamination
- SOP G-9 - Sample Packing and Shipping
- SOP 302 - Surface Soil Sampling
- SOP 401 - Drum Sampling
- SOP 402 - Tank Sampling
- SOP 406 - Investigation-Derived Wastes
- SOP 802 - Personal Sampling Pumps
- SOP 807 - Asbestos Sampling
- SKC Pump PXCR8 Quick Start Guide/Manual

- Jerome J505 Quick Start Guide/Manual
- MultiRAE Pro Quick Start Guide/Manual
- AreaRAE Pro Quick Start Guide/Manual
- Region 10 First Step Hazard Classification Guide

Soil, water samples, and asbestos samples will be shipped as needed to meet hold and TAT requirements. Mercury air samples will be shipped out the day of collection or the following day.

14.1 MODIFICATION OR ADDITIONS TO APPLICABLE SOPS

There are no modifications or additions are anticipated.

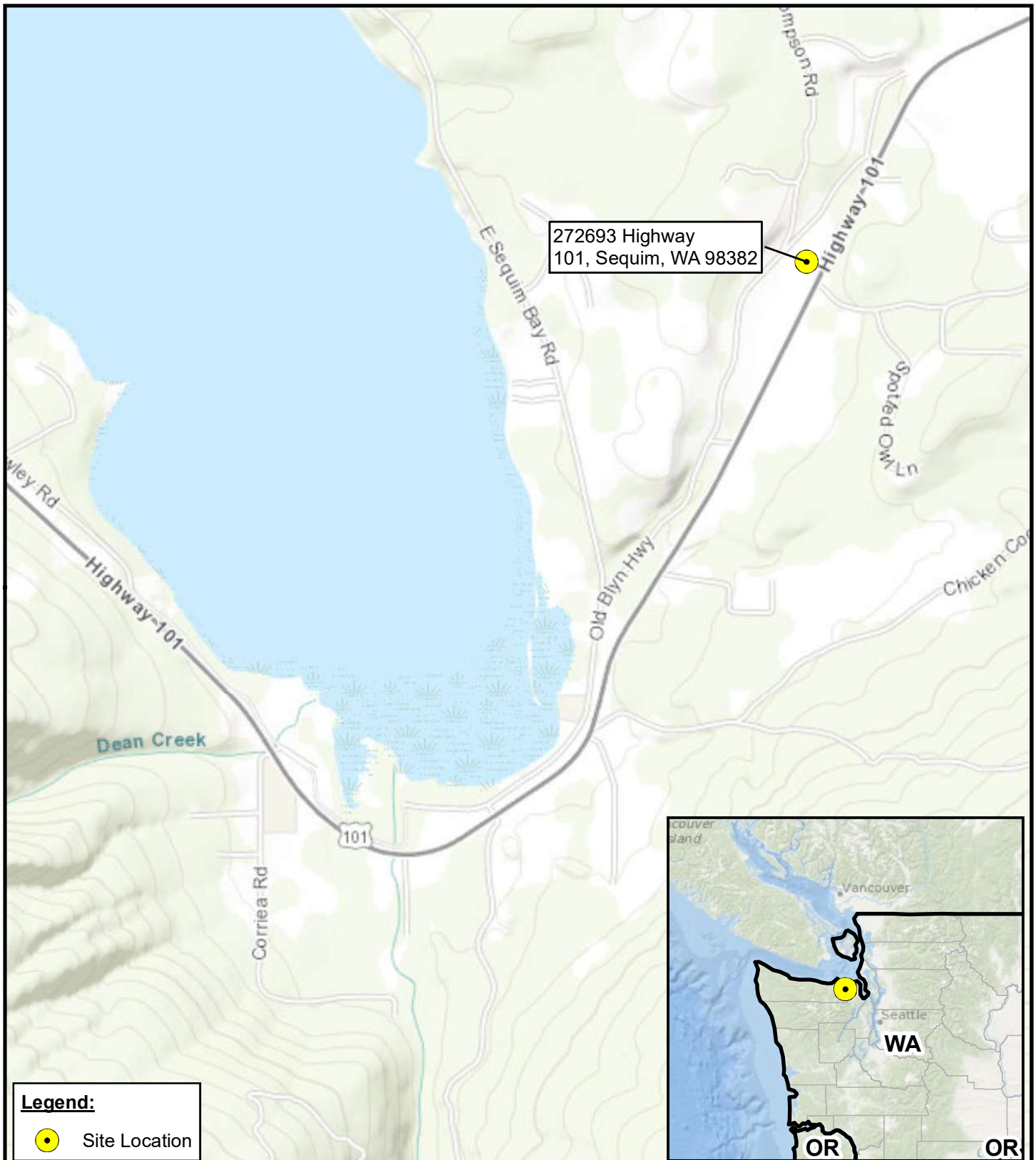
15 REFERENCES

United States Environmental Protection Agency (USEPA), 2020, *Quality Assurance Plan for the USEPA Region 10 Emergency Management Branch*.

Weston Solutions, Inc. (WESTON), 2020, Superfund Technical Assistance and Response Team (START)-V Programmatic Quality Assurance Project Plan.

WESTON, 2021, START-V Site-Specific Data Management Plan.

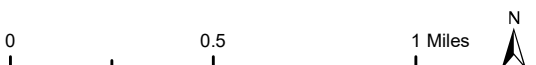
FIGURES



Legend:

● Site Location

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
 Projection: Mercator Auxiliary Sphere
 Datum: WGS 1984
Source:
 Background: ESRI World Topo Map (2021)
 Site Boundry: Georeferenced ESRI World Imagery
 Inset Background: NOAA National Geographic Ocean Basemap (2021)



Prepared for:
 USEPA - Region 10



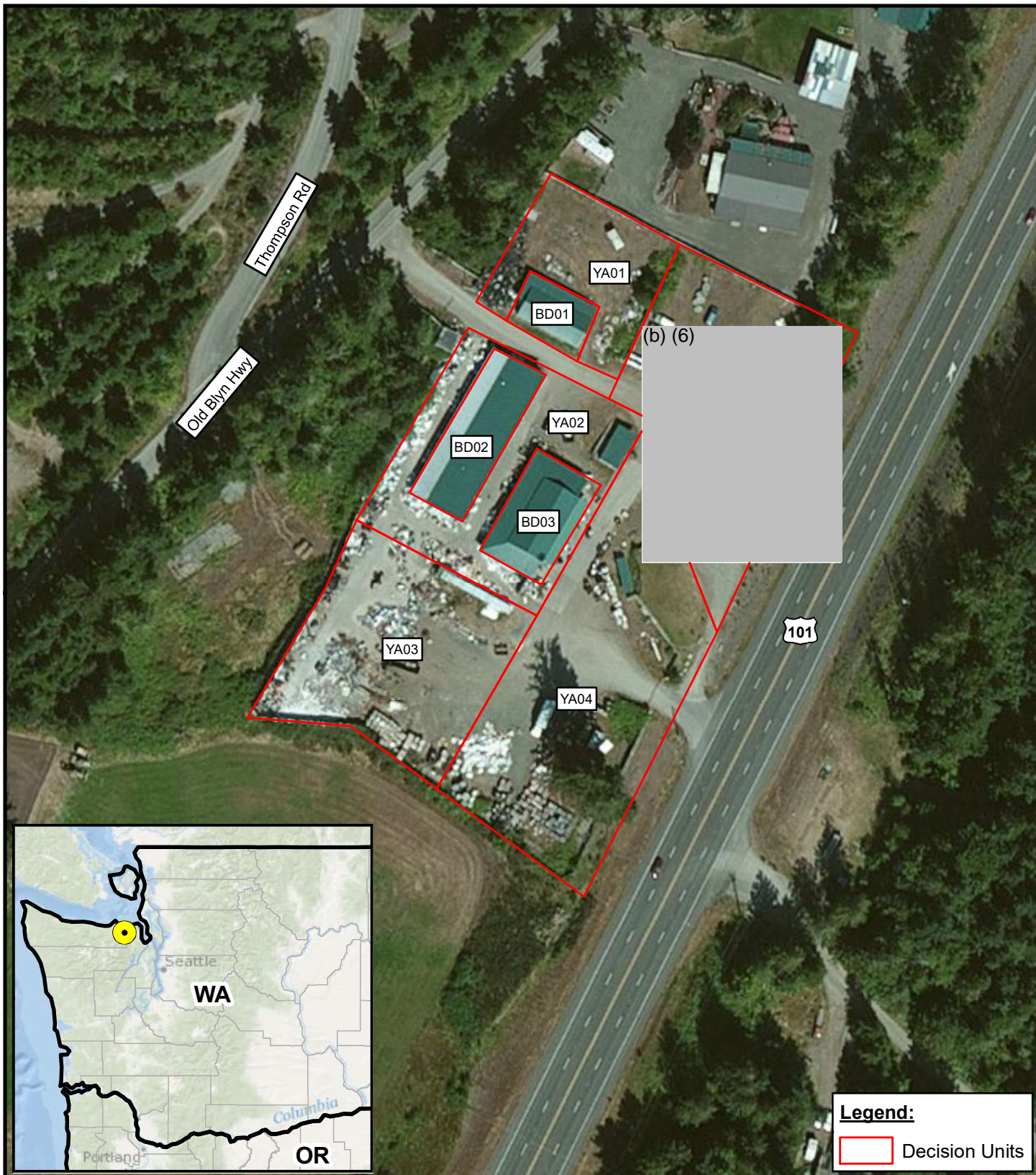
TO No./Subtask No.:
 68HE0721F0058

Prepared By:
 Weston Solutions, Inc.
 START V
 1011 SW Klickitat Way
 Suite 212
 Seattle, WA



FIGURE 1 **E-CYCLE AREA MAP** **E-CYCLE NW** **SEQUIM, CLALLAM COUNTY** **WASHINGTON**


Date: 4/20/2021



Legend:
 Decision Units

Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
Projection: Mercator Auxiliary Sphere
Datum: WGS 1984

Source:
Background: ESRI World Imagery Clarity Map (2021)
Inset Background: NOAA National Geographic Ocean Basemap (2021)

0 200 400 Feet 

Prepared for:
USEPA - Region 10



TO No./Subtask No.:
68HE0721F0058

Prepared By:
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Suite 212
Seattle, WA



FIGURE 2 E-CYCLE SITE MAP E-CYCLE NW SEQUIM, CLALLAM COUNTY WASHINGTON

Date: 4/20/2021

ATTACHMENT A
CONTAINER, PRESERVATION, AND HOLD TIMES

Table A1 Container, Preservation, and Hold Times								
Analysis Type	Sub Analysis	Matrix	Analytical Method	Container Type	Minimum Volume	Chemical Preservative	Temperature/ Storage	Technical Holding Times
Metals	Metals (Not including mercury or hexavalent chromium. Includes TAL, PP, RCRA lists)	Solid	EPA 6000 / 7000 Series	Glass Jar	4 oz	N/A	None	6 months
		Aqueous	EPA 6000 / 7000 Series	PTFE or HDPE	250 mL	HNO ₃ to pH < 2	Not listed	6 months
	Mercury	Solid	EPA 7471B	Glass Jar	4 oz	N/A	< 6 °C	28 days
		Aqueous	EPA 7470A	PTFE or HDPE	250 mL	HNO ₃ to pH < 2	Not listed	28 days
VOCs	VOCs	Solid	EPA 5035 / 8260D	Amber Vial with Septa Lid	1 x 40 mL	MeOH (10 mL)	< 6 °C	48 hours to lab / 14 days
		Aqueous	EPA 8260D	Amber Vial with Septa Lid	3 x 40 mL	HCl to pH< 2	< 6 °C (headspace free)	14 days
SVOCs	SVOCs / PAHs	Solid	EPA 8270E	Glass Jar	4 oz	N/A	< 6 °C	14 days
		Aqueous	EPA 8270E	Amber Glass	2 x 100 mL	N/A	< 6 °C	7 days
PCBs	PCBs	Solid	EPA 8082A	Glass Jar	4 oz	N/A	< 6 °C	None
		Aqueous	EPA 8082A	Amber Glass	2 x 100 mL	N/A	< 6 °C	None
Pesticides and Herbicides	Chlorinated Pesticides	Solid	EPA 8081B	Glass Jar	4 oz	N/A	< 6 °C	14 days
		Aqueous	EPA 8081B	Amber Glass	2 x 100 mL	N/A	< 6 °C	7 days
NWTPH	Gasoline-Range Organics	Solid	TPHs/8015C or NWTPH-Gx	Amber Vial with Septa Lid	1 x 40 mL	MeOH (10 mL)	< 6° C (headspace free)	14 days
		Aqueous	TPHs/8015C or NWTPH-Gx	Amber Vial with Septa Lid	3 x 40 mL	pH < 2 with HCl	< 6° C (headspace free)	7 days unpreserved 14 days preserved
	Diesel-Range Organics	Solid	TPHs/8015C or NWTPH-Dx	Glass Jar	4 oz	N/A	< 6° C	14 days
		Aqueous	TPHs/8015C or NWTPH-Dx	Glass Amber	2 x 40 mL	pH < 2 with HCl	< 6° C	7 days unpreserved

								14 days preserved
Note:	For matrix spike and/or duplicate samples, no additional volume is required for air, oil, product, or solid samples except for VOC and gasoline range organics which require triple volume. Aqueous samples require triple volume for organic analyses and double volume for inorganic analysis.							
	Matrix spike and/or duplicate samples are collected at a rate of 1 per 20 samples collected.							
Notes:								
	°C = degrees Celsius.							
	EPA = United States Environmental Protection Agency.							
	g = grams							
	HCl = Hydrochloric acid							
	HDPE = High-density polyethylene							
	HNO_3 = Nitric acid							
	L = liter							
	mL = milliliters							
	N/A = not applicable							
	NWTPH = North West Total Petroleum Hydrocarbons							
	oz = ounce							
	PAH = Polyaromatic hydrocarbon							
	PCBs = Polychlorinated biphenyls							
	PP = Priority Pollutant							
	PTFE = Polytetrafluoroethylene							
	RCRA = Resource Conservation and Recovery Act							
	SVOCs = Semivolatile Organic Compounds							
	TAL = Target Analyte List							
	VOCs = Volatile Organic Compounds							

ATTACHMENT B
SITE ACTION LEVELS

ATTACHMENT B
E-Cycle NW Site Action Levels - Soil

Analyte	CAS #	Units	EPA RSLs Soil: Residential Soil	Washington MTCA Soil: Method B Cancer	Washington MTCA Soil: Method B Non-cancer
Volatile Organic Compounds					
1,1,1-Trichloroethane	71-55-6	mg/kg	8100	NA	160000
1,1,2,2-Tetrachloroethane	79-34-5	mg/kg	0.6	5	1600
1,1,2-Trichloro-1,2,2-trichloroethane	76-13-1	mg/kg	NA	NA	NA
1,1,2-Trichloroethane	79-00-5	mg/kg	1.1	18	320
1,1-Dichloroethane	75-34-3	mg/kg	3.6	180	16000
1,1-Dichloroethene	75-35-4	mg/kg	230	NA	4000
1,1-Dichloropropene	563-58-6	mg/kg	NA	NA	NA
1,2,3-Trichlorobenzene	87-61-6	mg/kg	63	NA	NA
1,2,3-Trichloropropane	96-18-4	mg/kg	0.0051	NA	NA
1,2,4-Trichlorobenzene	120-82-1	mg/kg	24	34	800
1,2,4-Trimethylbenzene	95-63-6	mg/kg	300	NA	800
1,2-Dibromo-3-Chloropropane	96-12-8	mg/kg	0.0053	1.3	16
1,2-Dibromoethane (EDB)	106-93-4	mg/kg	0.036	0.5	720
1,2-Dichlorobenzene	95-50-1	mg/kg	1800	NA	7200
1,2-Dichloroethane (DCA)	107-06-2	mg/kg	0.46	11	480
1,2-Dichloropropane	78-87-5	mg/kg	2.5	27	3200
1,3,5-Trimethylbenzene	108-67-8	mg/kg	270	NA	800
1,3-Dichlorobenzene	541-73-1	mg/kg	NA	NA	NA
1,4-Dichlorobenzene	106-46-7	mg/kg	2.6	190	5600
2,2-Dichloropropane	594-20-7	mg/kg	NA	NA	NA
2-Butanone (MEK)	78-93-3	mg/kg	27000	NA	48000
2-Hexanone	591-78-6	mg/kg	200	NA	NA
2-Methylnaphthalene	91-57-6	mg/kg	240	NA	320
4-Chlorophenyl Phenyl Ether	7005-72-3	mg/kg	NA	NA	NA
4-Isopropyltoluene	99-87-6	mg/kg	NA	NA	NA
4-Methyl-2-pentanone (MIBK)	108-10-1	mg/kg	33000	NA	6400
Acenaphthene	83-32-9	mg/kg	3600	NA	4800
Acetone	67-64-1	mg/kg	61000	NA	72000
Benzene	71-43-2	mg/kg	1.2	18	320
Bromobenzene	108-86-1	mg/kg	290	NA	NA
Bromochloromethane	74-97-5	mg/kg	NA	NA	NA
Bromodichloromethane	75-27-4	mg/kg	0.29	16	1600
Bromoform	75-25-2	mg/kg	19	130	1600
Bromomethane	74-83-9	mg/kg	6.8	NA	110
Carbon disulfide	75-15-0	mg/kg	770	NA	8000
Carbon tetrachloride	56-23-5	mg/kg	0.65	14	320
Chlorobenzene	108-90-7	mg/kg	280	NA	1600
Chlorodibromomethane	124-48-1	mg/kg	8.3	12	1600
Chloroethane	75-00-3	mg/kg	14000	NA	NA
Chloroform	67-66-3	mg/kg	0.32	32	800
Chloromethane	74-87-3	mg/kg	110	NA	NA
Chlorotoluene, o-	95-49-8	mg/kg	1600	NA	1600
Chlorotoluene, p-	106-43-4	mg/kg	1600	NA	NA
cis-1,2-Dichloroethene	156-59-2	mg/kg	160	NA	160
cis-1,3-Dichloropropene	10061-01-5	mg/kg	NA	NA	NA
Cyclohexane	110-82-7	mg/kg	6500	NA	NA
Dibromomethane (Methylene Bromide)	74-95-3	mg/kg	24	NA	NA
Dichlorodifluoromethane	75-71-8	mg/kg	87	NA	16000
Dichloropropane, 1,3-	142-28-9	mg/kg	1600	NA	NA
Ethylbenzene	100-41-4	mg/kg	5.8	NA	8000
fluorene	86-73-7	mg/kg	2400	NA	3200

ATTACHMENT B
E-Cycle NW Site Action Levels - Soil

Analyte	CAS #	Units	EPA RSLs Soil: Residential Soil	Washington MTCA Soil: Method B Cancer	Washington MTCA Soil: Method B Non-cancer
Isopropylbenzene	98-82-8	mg/kg	1900	NA	8000
m,p-Xylene	179601-23-1	mg/kg	NA	NA	NA
Methyl acetate	79-20-9	mg/kg	78000	NA	80000
Methyl tert-butyl ether	1634-04-4	mg/kg	47	560	NA
Methylcyclohexane	108-87-2	mg/kg	NA	NA	NA
Methylene Chloride	75-09-2	mg/kg	57	500	480
naphthalene	91-20-3	mg/kg	2	NA	1600
n-butylbenzene	104-51-8	mg/kg	3900	NA	4000
n-Propylbenzene	103-65-1	mg/kg	3800	NA	NA
o-Xylene	95-47-6	mg/kg	650	NA	16000
Pentachlorophenol	87-86-5	mg/kg	1	2.5	400
sec-butylbenzene	135-98-8	mg/kg	7800	NA	8000
Styrene	100-42-5	mg/kg	6000	NA	16000
tert-butylbenzene	98-06-6	mg/kg	NA	NA	8000
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	2	38	2400
Tetrachloroethene	127-18-4	mg/kg	24	480	480
Toluene	108-88-3	mg/kg	4900	NA	6400
trans-1,2-Dichloroethene	156-60-5	mg/kg	1600	NA	1600
trans-1,3-Dichloropropene	10061-02-6	mg/kg	NA	NA	NA
Trichloroethene	79-01-6	mg/kg	0.94	NA	40
Trichlorofluoromethane	75-69-4	mg/kg	23000	NA	24000
Vinyl chloride	75-01-4	mg/kg	0.059	NA	240
Semi-Volatile Organic Compounds					
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/kg	NA	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	mg/kg	NA	NA	2400
2,4,5-Trichlorophenol	95-95-4	mg/kg	6300	NA	8000
2,4,6-Trichlorophenol	88-06-2	mg/kg	49	91	80
2,4-Dichlorophenol	120-83-2	mg/kg	190	NA	240
2,4-Dimethylphenol	105-67-9	mg/kg	1300	NA	1600
2,4-Dinitrophenol	51-28-5	mg/kg	130	NA	160
2,4-Dinitrotoluene	121-14-2	mg/kg	1.7	3.2	160
2,6-Dinitrotoluene	606-20-2	mg/kg	0.36	0.67	24
2-Chloronaphthalene	91-58-7	mg/kg	4800	NA	NA
2-Chlorophenol	95-57-8	mg/kg	390	NA	400
2-Methylnaphthalene	91-57-6	mg/kg	240	NA	320
2-Methylphenol	95-48-7	ug/kg	NA	NA	NA
2-Nitroaniline	88-74-4	ug/kg	NA	NA	NA
2-Nitrophenol	88-75-5	ug/kg	NA	NA	NA
3 & 4 Methylphenol	15831-10-4	ug/kg	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	ug/kg	NA	NA	NA
3-Nitroaniline	99-09-2	ug/kg	NA	NA	NA
4,6-Dinitro-2-methylphenol	534-52-1	ug/kg	NA	NA	NA
4-Bromophenyl phenyl ether	101-55-3	ug/kg	NA	NA	NA
4-Chloro-3-methylphenol	59-50-7	ug/kg	NA	NA	NA
4-Chlorophenyl Phenyl Ether	7005-72-3	mg/kg	NA	NA	NA
4-Nitroaniline	100-01-6	ug/kg	NA	NA	NA
4-Nitrophenol	100-02-7	ug/kg	NA	NA	NA
Acenaphthene	83-32-9	mg/kg	3600	NA	4800
Acenaphthylene	208-96-8	mg/kg	NA	NA	NA
Acetophenone	98-86-2	mg/kg	7800	NA	8000
aniline	62-53-3	mg/kg	NA	180	560
Anthracene	120-12-7	mg/kg	18000	NA	24000
Atrazine	1912-24-9	mg/kg	2.4	4.3	2800

ATTACHMENT B
E-Cycle NW Site Action Levels - Soil

Analyte	CAS #	Units	EPA RSLs Soil: Residential Soil	Washington MTCA Soil: Method B Cancer	Washington MTCA Soil: Method B Non-cancer
Benzaldehyde	100-52-7	mg/kg	170	250	8000
Benzo(a)anthracene	56-55-3	mg/kg	1.1	NA	NA
Benzo(a)pyrene	50-32-8	mg/kg	0.11	0.19	24
Benzo(b)fluoranthene	205-99-2	mg/kg	1.1	NA	NA
Benzo(g,h,i)perylene	191-24-2	mg/kg	NA	NA	NA
Benzo(k)fluoranthene	207-08-9	mg/kg	1.1	NA	NA
Benzoic Acid	65-85-0	mg/kg	250000	NA	320000
Benzyl Alcohol	100-51-6	mg/kg	6300	NA	8000
bis (2-chloroisopropyl) ether	108-60-1	ug/kg	NA	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	mg/kg	190	NA	NA
Bis(2-chloroethyl)ether	111-44-4	ug/kg	NA	NA	NA
Bis(2-ethylhexyl) phthalate	117-81-7	mg/kg	39	71.4	1600
Butyl benzyl phthalate	85-68-7	mg/kg	290	530	16000
Caprolactam	105-60-2	mg/kg	31000	NA	40000
Carbazole	86-74-8	ug/kg	NA	NA	NA
Chloroaniline, p-	106-47-8	mg/kg	2.7	5	320
chrysene	218-01-9	mg/kg	110	NA	NA
Cresol, p-	106-44-5	mg/kg	6300	NA	8000
Dibenzo(a,h)anthracene	53-70-3	mg/kg	0.11	NA	NA
Dibenzofuran	132-64-9	mg/kg	78	NA	80
Diethyl phthalate	84-66-2	mg/kg	51000	NA	64000
Dimethyl phthalate	131-11-3	ug/kg	NA	NA	NA
Di-n-butyl phthalate	84-74-2	mg/kg	6300	NA	NA
Di-n-octyl phthalate	117-84-0	mg/kg	630	NA	800
Fluoranthene	206-44-0	mg/kg	2400	NA	3200
Fluorene	86-73-7	mg/kg	2400	NA	3200
Hexachlorobenzene	118-74-1	mg/kg	0.21	0.63	64
Hexachlorobutadiene	87-68-3	mg/kg	1.2	13	80
Hexachlorocyclopentadiene	77-47-4	mg/kg	1.8	NA	480
Hexachloroethane	67-72-1	mg/kg	1.8	25	56
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	1.1	8.3	NA
Isophorone	78-59-1	mg/kg	570	1100	16000
Nitrobenzene	98-95-3	mg/kg	5.1	NA	160
N-Nitrosodimethylamine	62-75-9	mg/kg	NA	NA	NA
N-Nitrosodi-n-propylamine	621-64-7	mg/kg	0.078	NA	NA
n-Nitrosodiphenylamine(as diphenylamine)	86-30-6	mg/kg	110	NA	NA
Pentachlorophenol	87-86-5	mg/kg	1	2.5	400
Phenanthrene	85-01-8	ug/kg	NA	NA	NA
Phenol	108-95-2	mg/kg	19000	NA	24000
Pyrene	129-00-0	mg/kg	1800	NA	2400
Pesticides					
4,4'-DDD	72-54-8	mg/kg	1.9	4.2	2.4
4,4'-DDE	72-55-9	mg/kg	2	2.9	24
4,4'-DDT	50-29-3	mg/kg	1.9	2.9	40
Aldrin	309-00-2	mg/kg	0.039	0.059	2.4
alpha-BHC	319-84-6	mg/kg	0.086	0.16	640
alpha-Chlordane	5103-71-9	NA	NA	NA	NA
beta-BHC	319-85-7	mg/kg	0.3	0.56	NA
delta-BHC	319-86-8	NA	NA	NA	NA
Dieldrin	60-57-1	mg/kg	0.034	0.063	4
Endosulfan I	959-98-8	NA	NA	NA	NA
Endosulfan II	33213-65-9	NA	NA	NA	NA

ATTACHMENT B
E-Cycle NW Site Action Levels - Soil

Analyte	CAS #	Units	EPA RSLs Soil: Residential Soil	Washington MTCA Soil: Method B Cancer	Washington MTCA Soil: Method B Non-cancer
Endosulfan sulfate	1031-07-8	mg/kg	380	NA	NA
Endrin	72-20-8	mg/kg	19	NA	24
Endrin aldehyde	7421-93-4	NA	NA	NA	NA
Endrin ketone	53494-70-5	NA	NA	NA	NA
gamma Chlordane	5103-74-2	NA	NA	NA	NA
gamma-BHC (Lindane)	58-89-9	mg/kg	0.57	0.91	24
Heptachlor	76-44-8	mg/kg	0.13	0.22	40
Heptachlor epoxide	1024-57-3	mg/kg	0.07	0.11	1
Methoxychlor	72-43-5	mg/kg	320	NA	400
Toxaphene	8001-35-2	mg/kg	0.49	0.91	NA
Polychlorinated Biphenyls					
Aroclor-1016 (PCB-1016)	12674-11-2	mg/kg	4.1	14	5.6
Aroclor-1221 (PCB-1221)	11104-28-2	mg/kg	0.2	NA	NA
Aroclor-1232 (PCB-1232)	11141-16-5	mg/kg	0.17	NA	NA
Aroclor-1242 (PCB-1242)	53469-21-9	mg/kg	0.23	NA	NA
Aroclor-1248 (PCB-1248)	12672-29-6	mg/kg	0.23	NA	NA
Aroclor-1254 (PCB-1254)	11097-69-1	mg/kg	0.24	0.5	1.6
Aroclor-1260 (PCB-1260)	11096-82-5	mg/kg	0.24	0.5	NA
Aroclor-1262 (PCB-1262)	37324-23-5	NA	NA	NA	NA
Aroclor-1268 (PCB-1268)	11100-14-4	NA	NA	NA	NA
Metals					
Aluminum	7429-90-5	mg/kg	77000	NA	80000
Antimony	7440-36-0	mg/kg	31	NA	32
Arsenic	7440-38-2	mg/kg	0.68	0.67	24
Barium	7440-39-3	mg/kg	15000	NA	16000
Beryllium	7440-41-7	mg/kg	160	NA	160
Cadmium	7440-43-9	mg/kg	71	NA	NA
Chromium	7440-47-3	mg/kg	120000	NA	120000
Cobalt	7440-48-4	mg/kg	23	NA	NA
Copper	7440-50-8	mg/kg	3100	NA	3200
Iron	7439-89-6	mg/kg	55000	NA	56000
Lead	7439-92-1	mg/kg	400	NA	NA
Manganese	7439-96-5	mg/kg	1800	NA	11000
Mercury	7439-97-6	mg/kg	11	NA	NA
Nickel	7440-02-0	mg/kg	0.76	NA	1600
Selenium	7782-49-2	mg/kg	390	NA	400
Silver	7440-22-4	mg/kg	390	NA	400
Thallium	7440-28-0	mg/kg	0.78	NA	0.8
Vanadium	7440-62-2	mg/kg	390	NA	400
Zinc	7440-66-6	mg/kg	23000	NA	24000

Notes:

CAS # - Chemical Abstract Services Number

EPA - Environmental Protection Agency

RSL - Regional Screening Levels

MTCA - Model Toxics Control Act

mg/kg - milligrams per kilogram

NA - Not Applicable

ug/kg - microgram per kilogram

ATTACHMENT B
E-Cycle NW Site Action Levels - Surface Water

Analyte	CAS #	Units	Washington MTCA Surface Water: Method B Cancer	Washington MTCA Surface Water: Method B Non cancerous
Volatile Organic Compounds				
1,1,1-Trichloroethane	71-55-6	ug/L	NA	930000
1,1,1,2-Tetrachloroethane	630-20-6	ug/L	NA	NA
1,1,2,2-Tetrachloroethane	79-34-5	ug/L	6.5	10000
1,1,2-Trichloro-1,2,2-	76-13-1	ug/L	NA	NA
1,1,2-Trichloroethane	79-00-5	ug/L	25	2300
1,1-Dichloroethane	75-34-3	ug/L	NA	NA
1,1-Dichloroethene	75-35-4	ug/L	NA	23100
1,1-Dichloropropene	563-58-6	ug/L	NA	NA
1,2,3-Trichlorobenzene	87-61-6	ug/L	NA	NA
1,2,3-Trichloropropane	96-18-4	ug/L	NA	NA
1,2,4-Trichlorobenzene	120-82-1	ug/L	2	230
1,2,4-Trimethylbenzene	95-63-6	ug/L	NA	NA
1,2-Dibromo-3-Chloropropane	96-12-8	ug/L	NA	NA
1,2-Dibromoethane (EDB)	106-93-4	ug/L	NA	NA
1,2-Dichlorobenzene	95-50-1	ug/L	NA	4200
1,2-Dichloroethane (DCA)	107-06-2	ug/L	59	13000
1,2-Dichloropropane	78-87-5	ug/L	43	25000
1,3,5-Trimethylbenzene	108-67-8	ug/L	NA	NA
1,3-Dichlorobenzene	541-73-1	ug/L	NA	NA
1,3-Dichloropropane	142-28-9	ug/L	NA	NA
1,4-Dichlorobenzene	106-46-7	ug/L	22	3300
2,2-Dichloropropane	594-20-7	ug/L	NA	NA
2-Butanone (MEK)	78-93-3	ug/L	NA	NA
2-Chlorotoluene	95-49-8	ug/L	NA	NA
2-Hexanone	591-78-6	ug/L	NA	NA
2-Methylnaphthalene	91-57-6	ug/L	NA	NA
4-Chlorophenyl Phenyl Ether	7005-72-3	ug/L	NA	NA
4-Chlorotoluene	106-43-4	ug/L	NA	NA
4-Isopropyltoluene	99-87-6	ug/L	NA	NA
4-Methyl-2-pentanone (MIBK)	108-10-1	ug/L	NA	NA
Acenaphthene	83-32-9	ug/L	NA	640
Acetone	67-64-1	ug/L	NA	NA
Benzene	71-43-2	ug/L	23	2000
Bromobenzene	108-86-1	ug/L	NA	NA
Bromochloromethane	74-97-5	ug/L	NA	NA
Bromodichloromethane	75-27-4	ug/L	NA	NA
Bromoform	75-25-2	ug/L	220	14000
Bromomethane	74-83-9	ug/L	NA	970
Carbon disulfide	75-15-0	ug/L	NA	NA
Carbon tetrachloride	56-23-5	ug/L	4.9	550
Chlorobenzene	108-90-7	ug/L	NA	5000
Chlorodibromomethane	124-48-1	ug/L	21	14000
Chloroethane	75-00-3	ug/L	NA	NA
Chloroform	67-66-3	ug/L	56	6900
Chloromethane	74-87-3	ug/L	NA	NA
cis-1,2-Dichloroethene	156-59-2	ug/L	NA	NA

ATTACHMENT B
E-Cycle NW Site Action Levels - Surface Water

Analyte	CAS #	Units	Washington MTCA Surface Water: Method B Cancer	Washington MTCA Surface Water: Method B Non cancerous
cis-1,3-Dichloropropene	10061-01-5	ug/L	NA	NA
Cyclohexane	110-82-7	ug/L	NA	NA
Dibromomethane	74-95-3	ug/L	NA	NA
Dichlorodifluoromethane	75-71-8	ug/L	NA	NA
Ethylbenzene	100-41-4	ug/L	NA	6900
Fluorene	86-73-7	ug/L	NA	3500
Isopropylbenzene	98-82-8	ug/L	NA	NA
m,p-Xylene	179601-23-1	ug/L	NA	NA
Methyl acetate	79-20-9	ug/L	NA	NA
Methyl tert-butyl ether	1634-04-4	ug/L	NA	NA
Methylcyclohexane	108-87-2	ug/L	NA	NA
Methylene Chloride	75-09-2	ug/L	3600	17000
Naphthalene	91-20-3	ug/L	NA	4900
n-Butylbenzene	104-51-8	ug/L	NA	NA
n-Propylbenzene	103-65-1	ug/L	NA	NA
o-Xylene	95-47-6	ug/L	NA	NA
Pentachlorophenol	87-86-5	ug/L	1.5	1200
sec-Butylbenzene	135-98-8	ug/L	NA	NA
Styrene	100-42-5	ug/L	NA	NA
tert-Butylbenzene	98-06-6	ug/L	NA	NA
Tetrachloroethene	127-18-4	ug/L	NA	NA
Toluene	108-88-3	ug/L	NA	19000
trans-1,2-Dichloroethene	156-60-5	ug/L	NA	33000
trans-1,3-Dichloropropene	10061-02-6	ug/L	NA	NA
Trichloroethene	79-01-6	ug/L	NA	120
Trichlorofluoromethane	75-69-4	ug/L	NA	NA
Vinyl chloride	75-01-4	ug/L	NA	6600
Semi-Volatile Organic Compounds				
1,2,4,5-Tetrachlorobenzene	95-94-3	ug/L	NA	NA
2,3,4,6-Tetrachlorophenol	58-90-2	ug/L	NA	NA
2,4,5-Trichlorophenol	95-95-4	ug/L	NA	NA
2,4,6-Trichlorophenol	88-06-2	ug/L	3.9	17
2,4-Dichlorophenol	120-83-2	ug/L	NA	190
2,4-Dimethylphenol	105-67-9	ug/L	NA	550
2,4-Dinitrophenol	51-28-5	ug/L	NA	3500
2,4-Dinitrotoluene	121-14-2	ug/L	5.5	1400
2,6-Dinitrotoluene	606-20-2	ug/L	NA	NA
2-Chloronaphthalene	91-58-7	ug/L	NA	NA
2-Chlorophenol	95-57-8	ug/L	NA	97
2-Methylnaphthalene	91-57-6	ug/L	NA	NA
2-Methylphenol	95-48-7	ug/L	NA	NA
2-Nitroaniline	88-74-4	ug/L	NA	NA
2-Nitrophenol	88-75-5	ug/L	NA	NA
3 & 4 Methylphenol	15831-10-4	NA	NA	NA
3,3'-Dichlorobenzidine	91-94-1	ug/L	NA	NA
3-Nitroaniline	99-09-2	ug/L	NA	NA
4,6-Dinitro-2-methylphenol	534-52-1	ug/L	NA	NA
4-Bromophenyl phenyl ether	101-55-3	ug/L	NA	NA

ATTACHMENT B
E-Cycle NW Site Action Levels - Surface Water

Analyte	CAS #	Units	Washington MTCA Surface Water: Method B Cancer	Washington MTCA Surface Water: Method B Non cancerous
4-Chloro-3-methylphenol	59-50-7	ug/L	NA	NA
4-Chloroaniline	106-47-8	ug/L	NA	NA
4-Chlorophenyl Phenyl Ether	7005-72-3	ug/L	NA	NA
4-Methylphenol	106-44-5	ug/L	NA	NA
4-Nitroaniline	100-01-6	ug/L	NA	NA
4-Nitrophenol	100-02-7	ug/L	NA	NA
Acenaphthene	83-32-9	ug/L	NA	640
Acenaphthylene	208-96-8	ug/L	NA	NA
Acetophenone	98-86-2	ug/L	NA	NA
Aniline	62-53-3	ug/L	NA	NA
Anthracene	120-12-7	ug/L	NA	26000
Atrazine	1912-24-9	ug/L	NA	NA
Benz(a)anthracene	56-55-3	ug/L	NA	NA
Benzaldehyde	100-52-7	ug/L	NA	NA
Benzo(a)pyrene	50-32-8	ug/L	0.22	26
Benzo(b)fluoranthene	205-99-2	ug/L	NA	NA
Benzo(g,h,i)perylene	191-24-2	ug/L	NA	NA
Benzo(k)fluoranthene	207-08-9	ug/L	NA	NA
Benzoic Acid	65-85-0	ug/L	NA	NA
Benzyl Alcohol	100-51-6	ug/L	NA	NA
bis (2-chloroisopropyl) ether	108-60-1	ug/L	NA	NA
Bis(2-chloroethoxy)methane	111-91-1	ug/L	NA	NA
Bis(2-chloroethyl)ether	111-44-4	ug/L	NA	NA
Bis(2-ethylhexyl) phthalate	117-81-7	ug/L	3.6	400
Butyl benzyl phthalate	85-68-7	ug/L	8.2	1300
Caprolactam	105-60-2	ug/L	NA	NA
Carbazole	86-74-8	ug/L	NA	NA
Chrysene	218-01-9	ug/L	NA	NA
Dibenz(a,h)anthracene	53-70-3	ug/L	NA	NA
Dibenzofuran	132-64-9	ug/L	NA	NA
Diethyl phthalate	84-66-2	ug/L	NA	28000
Dimethyl phthalate	131-11-3	ug/L	NA	NA
Di-n-butyl phthalate	84-74-2	ug/L	NA	NA
Di-n-octyl phthalate	117-84-0	ug/L	NA	NA
Fluoranthene	206-44-0	ug/L	NA	90
fluorene	86-73-7	ug/L	NA	3500
Hexachlorobenzene	118-74-1	ug/L	0.00047	0.24
Hexachlorobutadiene	87-68-3	ug/L	30	930
Hexachlorocyclopentadiene	77-47-4	ug/L	NA	3600
Hexachloroethane	67-72-1	ug/L	1.9	21
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	NA	NA
Isophorone	78-59-1	ug/L	1600	120000
Nitrobenzene	98-95-3	ug/L	NA	1800
N-Nitrosodimethylamine	62-75-9	ug/L	NA	NA
N-Nitrosodi-n-propylamine	621-64-7	ug/L	NA	NA
n-Nitrosodiphenylamine(as diphenylamine)	86-30-6	ug/L	NA	NA
Pentachlorophenol	87-86-5	ug/L	1.5	1200

ATTACHMENT B
E-Cycle NW Site Action Levels - Surface Water

Analyte	CAS #	Units	Washington MTCA Surface Water: Method B Cancer	Washington MTCA Surface Water: Method B Non cancerous
Phenanthrene	85-01-8	ug/L	NA	NA
Phenol	108-95-2	ug/L	NA	560000
pyrene	129-00-0	ug/L	NA	2600
Pesticides				
4,4'-DDD	72-54-8	ug/L	NA	NA
4,4'-DDE	72-55-9	ug/L	NA	NA
4,4'-DDT	50-29-3	ug/L	NA	NA
Aldrin	309-00-2	ug/L	0.000082	0.017
alpha-BHC	319-84-6	ug/L	NA	NA
alpha-Chlordane	5103-71-9	ug/L	NA	NA
beta-BHC	319-85-7	ug/L	NA	NA
delta-BHC	319-86-8	ug/L	NA	NA
Dieldrin	60-57-1	ug/L	0.000087	0.028
Endosulfan I	959-98-8	ug/L	NA	NA
Endosulfan II	33213-65-9	ug/L	NA	NA
Endosulfan sulfate	1031-07-8	ug/L	NA	NA
Endrin	72-20-8	ug/L	NA	0.2
Endrin aldehyde	7421-93-4	ug/L	NA	NA
Endrin ketone	53494-70-5	ug/L	NA	NA
gamma Chlordane	5103-74-2	ug/L	NA	NA
gamma-BHC (Lindane)	58-89-9	ug/L	NA	NA
Heptachlor	76-44-8	ug/L	0.00013	0.12
Heptachlor epoxide	1024-57-3	ug/L	0.000064	0.003
Methoxychlor	72-43-5	ug/L	NA	NA
Toxaphene	8001-35-2	ug/L	0.00045	NA
Polychlorinated Biphenyls				
Aroclor-1016 (PCB-1016)	12674-11-2	ug/L	0.003	0.0058
Aroclor-1221 (PCB-1221)	11104-28-2	ug/L	NA	NA
Aroclor-1232 (PCB-1232)	11141-16-5	ug/L	NA	NA
Aroclor-1242 (PCB-1242)	53469-21-9	ug/L	NA	NA
Aroclor-1248 (PCB-1248)	12672-29-6	ug/L	NA	NA
Aroclor-1254 (PCB-1254)	11097-69-1	ug/L	0.0001	0.0017
Aroclor-1260 (PCB-1260)	11096-82-5	ug/L	NA	NA
Aroclor-1262 (PCB-1262)	37324-23-5	NA	NA	NA
Aroclor-1268 (PCB-1268)	11100-14-4	NA	NA	NA
Metals				
Aluminum	7429-90-5	ug/L	NA	NA
Antimony	7440-36-0	ug/L	NA	1000
Arsenic	7440-38-2	ug/L	0.098	18
Barium	7440-39-3	NA	NA	NA
Beryllium	7440-41-7	ug/L	NA	270
Cadmium	7440-43-9	ug/L	NA	41
Chromium	7440-47-3	ug/L	NA	240000
Cobalt	7440-48-4	NA	NA	NA
Copper	7440-50-8	ug/L	NA	2900
Iron	7439-89-6	ug/L	NA	NA
Lead	7439-92-1	ug/L	NA	NA
Manganese	7439-96-5	NA	NA	NA

ATTACHMENT B

E-Cycle NW Site Action Levels - Surface Water

Analyte	CAS #	Units	Washington MTCA Surface Water: Method B Cancer	Washington MTCA Surface Water: Method B Non cancerous
Mercury	7439-97-6	ug/L	NA	NA
Nickel	7440-02-0	ug/L	NA	1100
Selenium	7782-49-2	ug/L	NA	2700
Silver	7440-22-4	ug/L	NA	26000
Thallium	7440-28-0	ug/L	NA	0.22
Vanadium	7440-62-2	NA	NA	NA
Zinc	7440-66-6	ug/L	NA	17000

Notes:

CAS # - Chemical Abstract Services Number

MTCA - Model Toxics Control Act

NA - Not Applicable

ug/L - microgram per liter